

## **Postdoctoral researcher – Plant traits, mycorrhizal functions and water and nutrient cycling in shrub-encroached alpine communities**

Expected starting date: 1 April 2021. Contracted period: 30 months full time.

The LUCSES (Forecasting impacts of land-use and climate change on ecosystem services from shrub-encroached mountain grassland) project is a joint project between the Alpine Ecology Laboratory (Grenoble) and the Institute for Ecology (Innsbruck, Austria). LUCSES will develop a plant trait based approach to the effects of shrub-encroachment following abandonment of mountain meadows on species composition, water and nutrient balances and thus the services of mountain meadows for humans. The core hypothesis of LUCSES is that shrub colonization results in a tipping point in relationships between traits and processes of nitrogen- and water cycling, and that this change can be related to characteristic traits of mountain shrubs and to mycorrhizal functions. LUCSES will comprise of: (1) in situ measurements of plant traits, mycorrhizal communities and water and nutrient cycling according to shrub encroachment; (2) lysimeter analyses of the effects of climate change (i.e. earlier snowmelt in France and summer drought in Austria) on water and nutrient budgets in herbaceous vs. encroached communities depending on their traits and mycorrhizal functions; (3) statistical modelling of ecosystem services of mountain shrub ecosystems.

The open position is for a young, enthusiastic scientist to lead the French site experimental lysimeter experiment and to participate in data collection and analyses for in situ gradients. The postdoctoral researcher will be expected to:

- Implement the lysimeter snow removal experiment at the Lautaret Alpine Station, facilitated by the technical expertise of Austrian partners who have over 10 years-experience of lysimeter water balance analyses in alpine meadows.
- Measure in the field and in the lab distinctive shrub traits for the French site.
- Analyse mycorrhizal communities across the two sites using molecular techniques and assays of their functions.
- Analyse the interrelationships between plant traits, mycorrhizal parameters and nitrogen cycling in lysimeters across the two sites.

Expected skills and expertise:

- A solid conceptual background in plant and microbial functional ecology.
- Understanding and measurements of carbon and nutrient cycling parameters.
- Understanding and measurements of soil microbial activities.
- Desirable experience in molecular analyses of microbial communities.
- Proficiency with statistical analyses and their implementation under R, including linear models, structural equation modelling and/or network analyses.
- Demonstrated experience in the independent writing of papers for international journals.
- Fluent oral and written communication in English.

Additional requirements:

- A PhD degree completed by the date of application.
- A capacity for independent work within a diverse, interdisciplinary and international team.
- Ability to spend multiple, consecutive days in the field (group accommodation)
- Ability to travel and spend significant periods at the Austrian site.
- A current driver's license.

For details on the position please contact: Dr Bello Mouhamadou – [bello.mouhamadou@univ-grenoble-alpes.fr](mailto:bello.mouhamadou@univ-grenoble-alpes.fr)